This listing of claims replaces all previous listings of claims in the application.

## **Listing of Claims:**

- 1. (previously presented) A recombinant immunoconjugate, comprising a therapeutic agent or a detectable label covalently linked to an RFB4 disulfide-stabilized Fv (dsFv) having a variable heavy chain (V<sub>H</sub>) comprising SEQ ID NO:2 in which a Cys residue is substituted for Arg at position 44; and a variable light chain (V<sub>L</sub>) comprising SEQ ID NO:4 in which a Cys residue is substituted for Gly at position 100.
- 2. (original) The recombinant immunoconjugate of claim 1, wherein said therapeutic agent is a toxin.
- 3. (original) The recombinant immunoconjugate of claim 2, wherein said toxin is a *Pseudomonas* exotoxin (PE) or a cytotoxic fragment thereof.
- 4. (original) The recombinant immunoconjugate of claim 3, wherein said cytotoxic fragment is PE38.
  - 5-6. (cancelled)
- 7. (previously presented) The recombinant immunoconjugate of claim 3, wherein said variable heavy (V<sub>H</sub>) chain is covalently linked to the amino terminus of said toxin.
- 8. (previously presented) The recombinant immunoconjugate of claim 1, wherein said  $V_H$  chain is covalently linked to said  $V_L$  chain through a linker peptide.
- 9. (previously presented) The recombinant immunoconjugate of claim 1, wherein said V<sub>H</sub> chain is linked to said V<sub>L</sub> chain through a cysteine-cysteine disulfide bond.
- 10. (original) The recombinant immunoconjugate of claim 8, wherein said linker peptide has the sequence of SEQ ID NO:5.

- 11. (previously presented) An expression cassette encoding a recombinant immunoconjugate comprising a sequence encoding for a toxin peptide and an RFB4 disulfide-stabilized Fv (dsFv) having a variable heavy chain ( $V_H$ ) comprising SEQ ID NO:2 in which a Cys residue is substituted for Arg at position 44; and a variable light chain ( $V_L$ ) comprising SEQ ID NO:4 in which a Cys residue is substituted for Gly at position 100.
  - 12. (cancelled).
- 13. (original) The expression cassette of claim 11, wherein said toxin is a *Pseudomonas* exotoxin (PE) or a cytotoxic fragment thereof.
- 14. (original) The expression cassette of claim 11, wherein said cytotoxic fragment is PE38.
  - 15. (cancelled)
- 16. (previously presented) The expression cassette of claim 11, further comprising a sequence encoding for a linker peptide having the sequence of SEQ ID NO:5.
  - 17. (original) A host cell comprising an expression cassette of claim 11.18-49. (cancelled)
- 50. (previously presented) A recombinant immunoconjugate, comprising a therapeutic agent or a detectable label covalently linked to a recombinant RFB4 disulfide-stabilized Fv (dsFv) antibody, wherein said antibody has:
- (i) a variable heavy chain  $(V_H)$  that is at least 90% identical to SEQ ID NO:2, where said  $V_H$  has the complementarity determining regions (CDRs) of reference SEQ ID NO:2 and a cysteine at amino acid position 44, and
- (ii) a variable light chain ( $V_L$ ) that is at least 90% identical to SEQ ID NO:4, where said  $V_L$  has the CDRs of reference SEQ ID NO:4 and a cysteine at amino acid position 100.

- 51. (previously presented) The recombinant immunoconjugate of claim 50, wherein said therapeutic agent is a toxin.
- 52. (previously presented) The recombinant immunoconjugate of claim 51, wherein said toxin is a *Pseudomonas* exotoxin (PE) or a cytotoxic fragment thereof.
- 53. (previously presented) The recombinant immunoconjugate of claim 52, wherein said cytotoxic fragment is PE38.
- 54. (previously presented) An expression cassette encoding a recombinant immunoconjugates of claim 50.
- 55. (previously presented) A host cell comprising an expression cassette of claim 54.
- 56. (previously presented) A recombinant immunoconjugate, comprising a therapeutic agent or a detectable label covalently linked to a recombinant RFB4 disulfide-stabilized Fv (dsFv) antibody, wherein said antibody has:
- (i) a variable heavy chain (V<sub>H</sub>) that is at least 95% identical to SEQ ID NO:2, where said V<sub>H</sub> has the complementarity determining regions (CDRs) of reference SEQ ID NO:2 and a cysteine at amino acid position 44, and
- (ii) a variable light chain ( $V_L$ ) that is at least 95% identical to SEQ ID NO:4, where said  $V_L$  has the CDRs of reference SEQ ID NO:4 and a cysteine at amino acid position 100.
- 57. (currently amended) A method for inhibiting the growth of a malignant B-cell *in vivo* that expresses a CD22 molecule on the surface of the cell, said method comprising: contacting said malignant B-cell with an effective amount of a recombinant immunoconjugates *in vivo* comprising a therapeutic agent or a detectable label covalently linked to an RFB4 disulfide-stabilized Fv (dsFv) having a variable heavy chain (V<sub>H</sub>) comprising SEQ ID NO:2 in which a Cys residue is substituted for Arg at position 44; and a variable light chain

- (V<sub>L</sub>) comprising SEQ ID NO:4 in which a Cys residue is substituted for Gly at position 100, thereby inhibiting the growth of the malignant B-cell.
- 58. (previously presented) The method of claim 57, wherein said therapeutic agent is a *Pseudomonas* exotoxin (PE) or a cytotoxic fragment thereof.
- 59. (previously presented) The method of claim 58, wherein said cytotoxic fragment is PE38.
- 60. (previously presented) The method of claim 58, wherein said variable heavy chain is covalently linked at the carboxyl terminus of said therapeutic agent.
- 61. (previously presented) The method of claim 57, wherein said  $V_H$  chain is covalently linked to said  $V_L$  chain through a linker peptide.
- 62. (previously presented) The method of claim 57, wherein said  $V_H$  chain is linked to said  $V_L$  chain through a cysteine-cysteine disulfide bond.
- 63. (previously presented) The method of claim 61, wherein said linker peptide has the sequence of SEQ ID NO:5.
- 64. (previously presented) The method of claim 57, wherein said malignant B-cell is contacted *in vivo*.
- 65. (previously presented) The method of claim 57, wherein said malignant B-cell is selected from the group consisting of: a rodent B-cell, a canine B-cell, and a primate B-cell.
- 66. (previously presented) The method of claim 57, wherein said malignant B cell is a chronic lymphocytic leukemia cell.
- 67. (previously presented) The method of claim 57, wherein said malignant B cell is a hairy cell leukemia cell.

- 68. (previously presented) The method of claim 57, wherein said malignant B cell is a prolymphocytic leukemia cell.
- 69. (previously presented)The method of claim 57, wherein said malignant B cell is a B cell lymphoma cell.
- 70. (previously presented) A pharmaceutical composition comprising an effective amount of a recombinant immunoconjugate of claim 1.
- 71. (previously presented) A pharmaceutical composition comprising an effective amount of a recombinant immunoconjugate of claim 50.
- 72. (previously presented) A pharmaceutical composition comprising an effective amount of a recombinant immunoconjugate of claim 56.